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PUPIL ASSESSMENT TECHNIQUES IN ZIMBABWE'S SECONDARY SCHOOLS (1984-1987)

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ABSTRACT

Interview and questionnaire data from 334 teachers and 100 school and department heads in 48 Zimbabwean secondary schools were used to determine current assessment practices, attitudes toward assessment alternatives and the impact of staff training in pupil assessment. The research was organized in three phases:

- 1. Interviews and questionnaires to determine existing assessment practice in schools;*
- 2. a training and evaluation programme for teachers and heads in schools identified as showing poor practice; and*
- 3. another survey in both 'good practice' and 'bad practice' schools to establish present thinking and attitudes towards psychometric testing with a view to disseminating useful information to other schools.*

Results

- While there was no significant difference in assessment practice between Group A (former-European) and Group B (former African) schools, there were significant differences between urban and rural schools.*
- Both urban and rural schools had a large proportion of teachers who lacked knowledge of test-scoring techniques and the use of statistics.*

- *The majority of teachers in Zimbabwe's secondary schools were in favour of improved methods of psychometric procedures which were more relevant to the needs of the country.*
- *Most heads and teachers benefited from training activities and felt that similar training ought to be implemented in all secondary schools in Zimbabwe.*
- *In general, teachers were in favour of psychometric testing.*

PUPIL ASSESSMENT TECHNIQUES IN ZIMBABWE'S SECONDARY SCHOOLS

The announcement of poor "O" level examination results in 1984 made Zimbabwean educators painfully aware of problems in our secondary schools. Since then, a number of researchers have been looking for solutions that are educationally sound, economically affordable and politically acceptable. But we have not been able to reach a consensus on what is sound, affordable or acceptable, especially in the area of pupil assessment.

Concern about pupil performance and teachers' assessment of such performance and whether teachers are making the right decisions about the use of the results of such assessment has been expressed by a large number of academics in recent years.

Zimbabwe's educational system has historical links with the educational system of Britain dating back to 1890 when colonial settlers came into the country. Since independence (1980) there has been emphasis by the government on the need to make both education and pupil assessment more relevant to the country's new order which aims at developing Zimbabwe into a more equitable society. For this reason, this study was centred around four basic questions:

- 1. To what extent does the existing assessment practice in Zimbabwe's secondary schools satisfy the objectives of (a) the present school curriculum and (b) the government's declared policy of socialism?*
- 2. Can psychometric methods of assessing pupils which are recommended as good practice in western countries be equally applied in Zimbabwe and meet the relevant needs of the country?*
- 3. What are the teachers' attitudes towards the use of such (psychometric) methods in Zimbabwe?*
- 4. What alternatives, if any, can be suggested in order to develop better assessment techniques in secondary schools?*

Definition of Terms

According to Gronlund (1985), assessment is a systematic process of determining the extent to which educational objectives are achieved. In this article, a more general definition of assessment is used to imply no more than some estimation of what has been learned.

Psychometrics is the branch of psychology concerned with the measurement or testing of mental facets such as the evaluation of intelligence, the determining of aptitudes, the assessment of personality, and so forth.

RATIONALE

It is assumed that so long as selection for jobs or for higher education is based on the number of "O" levels passed, or on the results of examination performance which is limited to certain skills and a defined body of knowledge, teachers will continue to emphasise in the classroom the fulfilling of set rules

and conditions which make passing an examination possible perhaps at the expense of other equally important curricular activities which are not examined.

For this reason, teachers ought to be more proficient in the use of tests. Since most examinations taken in Zimbabwe are based on the Cambridge Examinations Syndicate model, it stands to reason that most teachers model their tests around psychometric criteria on which Cambridge bases its examinations. Even today, with the localisation of examinations in Zimbabwe, Cambridge is still actively involved in the establishment of the local examination board. It is easy to foresee that Zimbabwe's examination system is not going to move completely away from the Cambridge system. Changes will remain within the scope of international "standards."

It has become a fact of life that technologies, ideologies and intellectual fashions of the rich and developed nations are exported wholesale to the poor and less developed nations through technical assistance 'experts' and through students from developing countries educated in the developed countries who take back the intellectual fashions of the developed world with them.

The rationale presented above justifies the use of psychometric tests in our schools even though it is felt among many educators and politicians that there is a need to look for alternative methods which are more applicable to the development of a more equitable society in Zimbabwe.

THE STUDY

The survey was organized in three phases. The first phase was concerned with determining the behaviour of Zimbabwe's secondary school teachers in assessment procedures. Using stratified random sampling techniques, 59 schools were selected from the five education provinces of Zimbabwe for data collection in both the pilot stages and the final survey. A total of 334 teachers

and 38 heads responded to questionnaires designed to elicit information on practices and purposes of assessment among other things. Questionnaire items were broken down into six domains:

- attitude towards the present assessment system
- assessment practice used in each school
- the adequacy of the present system
- the use of statistics and other psychometric procedures when assessing pupils' work
- school policies and general comments on the usefulness of assessment, and
- biographical details of the respondents.

SAMPLING

It was necessary to use stratified random sampling techniques as the research sampling design had to take account of the existence of the three distinct and separate categories of the secondary schools population in Zimbabwe which are: Group A schools (the former European-only schools but now racially mixed and situated mainly in urban areas), Group B schools (the former Blacks-only schools, state run, and situated mainly in urban areas) and rural secondary schools.

While a representative sample was drawn randomly in accordance with the techniques applicable to probability sampling from the schools in each category consideration was also given to the fact that different proportions of respondents should be used in different provinces depending on the school size and the number of respondents available. For instance more respondents were drawn from two schools in Masvingo (which had only one Group A school) to match an equal number drawn from five schools in Mashonaland.

Consideration during sampling was also given to the number of variables which were significant to the research. These included the sex, status, work experience, age, qualifications held and the subjects taught by the different respondents.

After these considerations, the questionnaires were administered personally to both heads and teachers. Although there were 48 schools sampled, only 38 heads and 334 teachers out of an expected 48 heads and 480 teachers responded to the full questionnaires. Some heads and teachers were absent from the schools while others were too busy during the time of the survey. Only a handful (about eight) failed to complete the questionnaires in full and these were not used in the analysis of the results.

TABLE 1
COMPOSITION AND CHARACTERISTICS OF THE
SAMPLE (BASED ON QUESTIONNAIRE RETURNS)

Province	No of schools	<u>School type</u>			<u>No of respondents</u>	
		A	B	Rural	Heads	Teachers
Mashonaland	15	5	6	4	12	98
Matabeleland	12	3	4	5	9	79
Manicaland	10	2	5	3	7	65
Midlands	7	2	4	1	6	58
Masvingo	4	1	1	2	4	34
Total	48	13	20	15	38	334

TABLE 2
TEACHERS' RESPONSES ACCORDING TO SCHOOL
TYPES

<u>School type</u>	<u>Number of teachers</u>	<u>Percentage</u>
Group A	111	33.2
Group B	176	52.7
Rural	47	14.1
<hr/>		
Totals	334	100.0

NB: The small number of respondents in rural schools is due to the large numbers of untrained teachers with less than 12 months experience in these schools. These were not used for the survey. Hence out of 13 rural schools, an average of 4 teachers were used from each school.

(a) RELIABILITY

Split-half reliability techniques were applied to determine the robustness of the instrument being used. A computer reliability analysis gave a Spearman-Brown co-efficient of 0.798 which, according to Guildford (1956), is a satisfactory figure for demonstrating the psychometric robustness of the instrument.¹

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- 1 Reliability analysis, final item statistics, and reliability coefficients are available from the author upon request.

(b) VALIDITY

The internal consistency shown in the reliability analysis suggested a high validity level (Guildford, 1956). Other methods such as factor analysis, to show construct validation, could have been used but as there were no established instruments measuring the traits under investigation and which are specifically developed for the population used for this study, the writer felt strongly against the use of the readily available validity data established with subjects in the United Kingdom or in the U.S.A.

Other researchers (Keats, 1971) have also warned against the use of such data with a group for whom the instruments were not prepared.

RESULTS

A summary of teacher responses to selected questionnaire items is presented in Table 4.

Respondents were also asked to indicate the specific statistical procedures they applied to pupil test results. These are shown in Table 5.

CRITERIA OF GOOD AND BAD PRACTICE

Questionnaire data were analyzed and criteria for good assessment practice were identified. These included the need to keep a written school policy on assessment; the use of assessment records for evaluations; the coordination of techniques with other members of staff; the ability to construct tests using psychometric procedures; the use of standardised tests; the methods used for marking pupils' work; the use of statistical procedures; the methods used for administration of tests; the use of technical equipment; the number of in-service courses attended; the number of books on assessment procedures read; and the extent to which guidance on assessment is given.

TABLE 4
TEACHER RESPONSES TO SELECTED
QUESTIONNAIRE ITEMS (n = 334)

Questionnaire Item	% Yes	% No
1. Is there a written policy of assessing pupils in your school?	47.3	52.7
2. Do you always record the results of the tests you give to pupils?	92.5	7.5
3. Do all the pupils get a common examination at some time during the term?	91.9	8.1
4. Are you able to predict your pupils' performances at the final "O" and "A" level exams on the basis of the common examinations given during the term?	85.3	14.7
5. Are there any other methods apart from written examinations used to assess pupils in your school?	56.6	43.4
6. Is every teacher in your department made aware of assessment procedures?	76.9	23.1
7. Do all the members of your department use the same marking or grading system?	72.2	27.8
8. Do you think that standardised published tests are better than teacher-made tests?	67.1	32.9

TABLE 5
TEACHER RESPONSES REGARDING THE USE OF
SELECTED ASSESSMENT TECHNIQUES

Assessment Technique	Freq	%
1 Percentages	N = 295	88.3
2 Calculation of means	N = 61	18.3
3 Graphs of distribution	N = 4	1.2
4 Standard deviations	N = 3	0.9
5 Comparison of tests' means	N = 25	7.5
6 Transformation of raw scores	N = 1	0.3
7 Item analysis	N = 0	0.0

PHASE I FINDINGS

Differences by School Type

Based upon these criteria for good practice, frequency tables were drawn by summing over item scores for each school type. At the .05 level of significance, Group A (formerly -European) and Group B (formerly-African) schools were not found to be significantly different in assessment practice (Chi-Square = 36.42 with 24 degrees of freedom).

Comparing urban (Group A and Group B) teachers to their rural counterparts, differences are significant at the .05 level (Chi-Square = 42.98 with 24 degrees of freedom), with urban teachers demonstrating preferred assessment behaviours.

General Findings

Analysis of the completed questionnaire revealed a number of findings:

- There was a lack of detailed school and departmental policy on assessment in 98% of the schools surveyed.
- The use of proper psychometric criteria among those teachers who gave teacher-made tests was rare and the majority of teachers had very little or no knowledge at all of appropriate statistical measures required in assessment.
- Teachers with higher qualifications (such as degrees) had more knowledge of proper assessment techniques based on psychometric criteria than those with lower qualifications (such as teachers' certificates only).

PHASE II - TRAINING

The second phase of the study involved the implementation of a training programme for teachers and heads.

One hundred course participants were chosen from those schools which were identified in the first phase of the study as performing rather poorly in the use of psychometric assessment. Topics chosen for the programme included "Test Construction", "Test Reliability and Validity", "Diagnostic, Achievement and Aptitude Tests", "Objective versus Essay Tests", "Marking and Grading of Tests", "Uniformity of Marking Scales", "Recording of Marks", "Statistics", and "Alternatives to Assessment". These topics had previously been identified through questionnaire responses as areas where information was inadequate among those who participated in the training programme.

An evaluation of the programme revealed that the three-day course had been quite beneficial to all who attended it. Among other things, participants recommended that the course should be given to all secondary school teachers in Zimbabwe. They also felt that they had gained very useful and deeper knowledge in assessment procedures and statistics, even though some admitted that they found statistics, because of its mathematical bias, a bit off-putting. Alternatives to present assessment practice were dis-

cussed. These included innovations such as *Records of Achievement* and the *Certificate of Pre-Vocational Education* (CPVE) introduced recently in the United Kingdom, *Orientation* now in use in France and *Education with Production* being implemented in Zimbabwe. Although some teachers were quite impressed by these innovations, the majority did not feel that there was an immediate need to change from the present psychometric practice. The only 'alternative' suggested by many was the use of continuous assessment in the place of the terminal examinations.

In order to determine whether the programme had an effect on both the teachers' attitudes towards assessment and their performance in assessment procedures, a third phase of the study was conducted after twelve months in all the schools used previously.

A questionnaire based mainly on psychometric criteria and including a section on attitude items modelled on the Likert-type scale was used to demonstrate present thinking. Heads' and teachers' responses were recorded and the final analysis and interpretation of results was made. It was noted that most teachers and heads had a favourable attitude towards psychometric practice and that most of them would like improved training facilities to achieve this knowledge.

With these findings, there is no doubt that Zimbabwe has an urgent need to improve methods of assessing pupils in schools, and since the terminal examination plays such a crucial role, the psychometric criteria on which such examinations are based automatically becomes an important source of knowledge for all teachers who make the testing of pupils their business.

It is quite understandable that a minority of teachers in this study were opposed to all forms of assessment because of the carelessness with which assessment methods are sometimes ap-

plied, the stratifying effect of assessment, the competitiveness, the marking unreliability and the inflexible teacher/pupil relationship brought about by assessment.

However, although there are deep-seated problems embedded in most institutionalised forms of assessment, comments made by respondents showed that the majority of teachers in this study felt that assessment can be educationally and socially justified because:-

- pupils can be motivated into learning when they know that an examination will ensue;
- assessment gives a reasonably valid and reliable indicator (though not perfect) of educational achievement;
- various abilities such as those objectified in Bloom's (1956) taxonomy are provided by examinations; and
- a high standard of performance by pupils can be maintained through the use of examinations.

Many teachers argued that it is only in the context of examinations that education can thrive. The prospect of an examination acts as an important incentive to learning and maximising the chances of passing. Such a prospect forces the students to organize their time and ideas, and to adopt systematic study habits.

It was also noted that among those who felt that all forms of assessment should be abolished, there were a few extremists who had developed a sense of animosity towards anything developed in the West. Their feelings can be summed by the thoughts of one teacher who wrote:

Examinations are irrelevant, unsocialist techniques developed by western societies in order to perpetuate their capitalist ideology on Africa.

However, the findings of this study have revealed that the policies on assessment being followed in Zimbabwe are no more socialist than those in use in Britain today and that psychometric testing can be implemented justifiably in both socialist and capitalist countries. Those opposed to psychometric testing could not offer alternatives when asked to, except to say that this method was not socialist enough.

It stands to reason, therefore, that until such a time when superior and more reliable methods of assessment are developed in Zimbabwe, the only alternative at the moment is to improve present practice. But, as mentioned earlier, this is not to say that psychometric testing recommended in this study is not without deficiencies. The point to take into consideration is the fact that many teachers use crude methods of assessment to make important judgments about their pupils, and since these methods are mostly a poor replication of external examinations which are based on psychometric criteria, then it is only reasonable that teachers should be given more information on proper psychometric practice.

Few teachers have the time or experience to construct questions which will test all and only those abilities which the examination is designed to assess. Sometimes what is intended to assess a student's depth of knowledge may instead display a student's ability to cram or predict questions. For this reason also, it is important to increase the awareness of teachers on the different functions performed by different tests.

The task of retraining teachers to bring about this awareness is an enormous one, and there is no doubt that socio-political and economic factors will always intrude upon educational ideals, but if the real functions of schooling are not to be extinguished, this view must be regarded as important.

Criticisms of Traditional Psychometric Assessment Techniques

Up to this point this article has highlighted the strengths of traditional psychometric assessment but as mentioned earlier, even the methods recommended by psychometricians are not without flaws. An attempt to summarise some of the inadequacies and harmful side-effects of current traditional assessment methods as seen in this study is made:

- There is an over-reliance on norm-referenced testing which identifies large numbers of pupils as failures.
- Assessment is seen as benefitting the school system rather than the pupil. Pupils are not given adequate information about themselves.
- There is an undesirable emphasis on extrinsic rewards through the assignment of grades and prizes, which fails to recognize and reinforce the achievements of the less able.
- There is too much encouragement of competitiveness at the expense of co-operation.
- There is too much concentration on academic subjects, with a consequent failure to value non-academic and non-cognitive aspects of the curriculum. For instance in many schools which practise Education with Production, the non-assessment of the subject implies low status of the subject.
- Much international research has shown that examinations are biased in favour of particular social and cultural groups and that they do not provide an equality of opportunity (Broadfoot 1986). Differences between examiners in speed of reading, fatigue, ideologies and competence may affect the marking process especially in essay-type questions.

All these inadequacies make one wonder what it is that gives public examinations their remarkable tenacity in the face of their injustice and effects on schooling. The answer is simple. No other device has been discovered which will replace the present assessment system (usually multiple choice tests and essays) even though this rather limited system tends to devalue other skills which individuals may possess.

RECOMMENDATIONS

Although controversy will continue to exist as to the functions and consequences of assessment in Zimbabwe's secondary schools, a number of recommendations are made from the findings of this study:-

1. Since training in assessment is not normally included as part of the compulsory syllabus in most teacher-training institutions, many teachers still regard assessment techniques as peripheral to their needs. Teacher training should therefore incorporate a section on assessment procedures in its syllabus.
2. As long as class sizes remain in the region of 40 to 50 pupils, the least-exhausting methods of assessment (but not necessarily the best) will be employed by teachers in order to cope with the demands of marking. Class sizes should be reduced to around 30.
3. In-service training should be set up for the benefit of those already in practice. An hour or two spent on assessment within working hours at least once a month will be of great benefit to many teachers.
4. The curriculum should be split into vocational and academic streams in order to cater for both the academic-oriented students and the non-academic.

5. Because writing good reliable test items is a consuming task requiring skilled occupation and extensive practice, it could be more economical in the long run if schools were to compile well-tested test items into item banks where untrained and inexperienced teachers could have access to such a resource.

6. There is need to continue to discriminate among candidates in an examination but this should be done in a more positive way. Acknowledgement and respect should be given to all the skills that each individual has and pupils should be oriented towards those skills rather than being forced to sit an academic examination which they are not capable of doing. Consequently, criterion-reinforced testing based on mastery learning is preferable to the present norm-referenced criteria used on pupils.

7. Illuminative assessment which aims at identifying pupils' strengths and weaknesses (and possible causes of low achievement such as linguistic difficulties, lack of parental support or other social problems) should be practised more seriously in our schools.

8. The assessment of non-cognitive abilities such as motivation, interests, personality and other personal attributes which may affect learning should be done by experts, e.g. school psychologists.

9. If examinations are to be used for classification or selection purposes, then comparative examinations should be conducted as seldom as possible, and the validity of such examinations must be continuously checked. If final examinations are held externally the results of school-based assessment should be taken into account.

10. An alliance between examiners, educators, relevant government departments and employers must be built if positive attitudes towards present assessment procedures are to be improved.

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